STREAMING QUICKTIME WITH REALSYSTEM SERVER 8

RealSystem iQ Technical Blueprint Series

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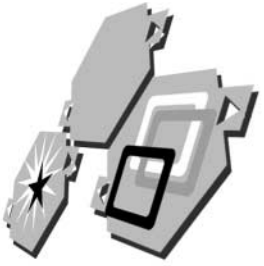


STREAMING QUICKTIME 4

This technical blueprint discusses methods and limitations of streaming Apple's QuickTime 4 with RealSystem™ Server 8 (RealServer™ 8). QuickTime 4 clips (`.mov`) encoded with any codec and hinted for streaming will stream from RealServer 8 to Apple's QuickTime 4 player. Hinted QuickTime clips encoded with a standards-based codec can stream to RealPlayer® 8. RealServer 8 does not support earlier versions of QuickTime, such as QuickTime 3.

Note

RealServer ignores any QuickTime tracks other than video or audio. It disregards scripting commands, for example.

QuickTime Codec Support

The QuickTime 4 player, but not RealPlayer, can play hinted QuickTime clips encoded with proprietary codecs, including:

- Sorenson
- Cinepak
- Qualcomm PureVoice
- Qdesign

Both the QuickTime 4 player and RealPlayer 8 can play hinted QuickTime clips encoded with standards-based codecs, including:

- h.261
- h.263
- MP3

Note

RealServer 8 can also stream uncompressed QuickTime clips to RealPlayer 8. However, RealPlayer 8 cannot play

uncompressed QuickTime clips that reside on a user's local machine.

RealSystem Features Supported by QuickTime

The following table summarizes the RealSystem features that work with QuickTime streaming.

RealSystem Features that Work with QuickTime 4

RealSystem Feature	Available?	Notes
Clips played by QuickTime 4 player on Windows and Macintosh	yes	All codec-compressed QuickTime clips can be streamed to the QuickTime 4 player.
Clips played by RealPlayer on Windows, Macintosh, and Linux	partial	Only QuickTime clips compressed by standards-based codecs can be streamed to RealPlayer 8.
On-demand streaming	yes	Use a `.ram` file or RealServer's `Ramgen` utility only when streaming to RealPlayer. When streaming to the QuickTime player, use QuickTime's standard embedding procedure with an RTSP URL that points to RealServer.
Live broadcasting	yes	Requires Sorenson Broadcaster to send a live QuickTime stream to RealServer.
Simulated live broadcasting with G2SLTA	yes	You can use RealServer's G2SLTA utility to broadcast a `.mov` clip as if it were a live stream.
Simulated live broadcasting with **PlaylistBroadcaster**	yes	You can use the Darwin Streaming Server's **PlaylistBroadcaster** application to send a `.mov` clip or series of clips to RealServer for broadcasting.
Encoder redundancy	partial	Encoder redundancy works fully only with RealPlayer and G2SLTA. For more information, see "Encoder Redundancy" on page 11.
Live distribution (splitting)	yes	Live distribution (splitting) works with both live and simulated live QuickTime broadcasts.

(Table Page 1 of 2)

RealSystem Features that Work with QuickTime 4 (continued)

RealSystem Feature	Available?	Notes
Multicasting	partial	Only RealPlayer supports RealSystem multicasting. ("Multicasting" means a method of broadcasting on a specially-configured network. Basic broadcasting on a standard network is called "unicasting.")
Archiving broadcast to RealServer	no	RealServer will not archive a `.mov` clip from a live broadcast.
Client statistics in RealServer access log	yes	RealServer records full access statistics for QuickTime players, just as it does for RealPlayers.
Authorization	yes	QuickTime player supports RealServer's basic username/password authentication. RealPlayer supports all forms of RealSystem authorization.

(Table Page 2 of 2)

Streaming On-Demand Clips with RealServer

This section briefly explains the URLs you use to request streaming clips from RealServer. For full information about RealServer, see *RealServer Administration Guide* available at **http://service.real.com/help/library/servers.html**. For more information about creating links and SMIL files, download *RealSystem Production Guide* from **http://service.real.com/help/library/encoders.html**.

The RealServer Content Directory

Installing RealServer creates a content directory within the main RealServer directory. The simplest way to stream audio and video clips is to move them to this directory, creating as many subdirectories as you need. In a default installation of RealServer on Windows, the content directory is:

```
C:\Program Files\Real\RealServer\Content
```

On UNIX, the content directory may be a directory such as this:

```
/usr/RealServer/Content
```

URLs to streaming clips do not list the path to this content directory. For example, a URL to the clip `dreamtime.mov` residing in RealServer's content directory would have a URL like the following if RealPlayer or the QuickTime player requested the clip directly:

```
rtsp://realserver.example.com/dreamtime.mov
```

If you create subdirectories in the RealServer content directory, you simply list the subdirectories before the file name in the request URL. If the clip `dreamtime.mov` is in the content directory's `movies` subdirectory, for example, a media player can request the clip with a URL that looks like this:

```
rtsp://realserver.example.com/movies/dreamtime.mov
```

In most cases, however, users do not request streaming media URLs directly through their media player. Instead, they launch their media player and request clips by clicking a Web page link. The following sections explain how to stream clips to the QuickTime player or RealPlayer from a Web page.

Streaming Clips to the QuickTime Player

When streaming QuickTime clips to the QuickTime player, you can embed the clip in a Web page using QuickTime's standard embedding procedures. For example, the following `<embed>` tag starts the QuickTime player as a browser plug-in and requests a QuickTime clip from RealServer:

```
<embed src="launch.mov" width="320" height="240"
qtsrc="rtsp://realserver.example.com/qt/dreamtime.mov">
```

The `src` parameter launches the QuickTime player based on the `.mov` extension. The `qtsrc` parameter tells the QuickTime player which clip to play. The `src` parameter cannot include an RTSP URL because a browser cannot interpret RTSP. The browser simply passes the value of the `qtsrc` parameter to the QuickTime player, however, without trying to interpret the URL.

Tip

You can also use the QuickTime **MakeRefMovie** tool to create a reference movie that contains the RTSP URL or URLs to your QuickTime presentation. For more information, see the Web page **http://www.apple.com/quicktime/authoring/qtwebfaq.html**.

Streaming QuickTime to RealPlayer 8

A QuickTime clip encoded with a standards-based codec can play in the QuickTime 4 player as described above, or in RealPlayer 8. To launch RealPlayer instead of the QuickTime player, place the clip in RealServer's content directory and create a Web page hyperlink to a URL that looks like this:

```
http://realserver.example.com/ramgen/dreamtime.mov
```

In this link, you do the following:

- Specify the standard HTTP protocol, which the Web browser will use to contact RealServer.
- Give the machine name (`realserver.example.com` in this example).
- Precede the file name with the parameter `/ramgen/`.

  The `/ramgen/` parameter looks like a directory in the URL but is instead a parameter that causes RealPlayer to launch and request the clip through RTSP. This ensures that `dreamtime.mov` streams to RealPlayer rather than downloads to the browser.

Streaming Clips from Other Machines

With RealServer, you can store your streaming clips anywhere on your network. If you have clips on other machines, you can quickly set up *mount points* that tell RealServer where to find the clips. Like `/ramgen/`, these mount points look like directory listings in URLs. For example, you might create a mount point named `/legacy/` that points to a directory on a network machine. The RTSP URL for `dreamtime.mov` would then be:

```
rtsp://realserver.example.com/legacy/dreamtime.mov
```

As with RealServer's standard content directory, you can have any number of subdirectories in your networked directories. They just slide into the URL in front of the file name.

Additional Information

See *RealServer Administration Guide* for instructions on creating new content mount points.

Broadcasting QuickTime Clips with G2SLTA

RealServer's G2SLTA utility can broadcast a prerecorded QuickTime clip as if it were a live event. This is the easiest way to broadcast QuickTime using RealServer, but it does not work for live input. The G2SLTA utility broadcasts QuickTime clips just as it does RealAudio® or RealVideo® clips. Your QuickTime clip resides on RealServer, and you run G2SLTA when you are ready to broadcast.

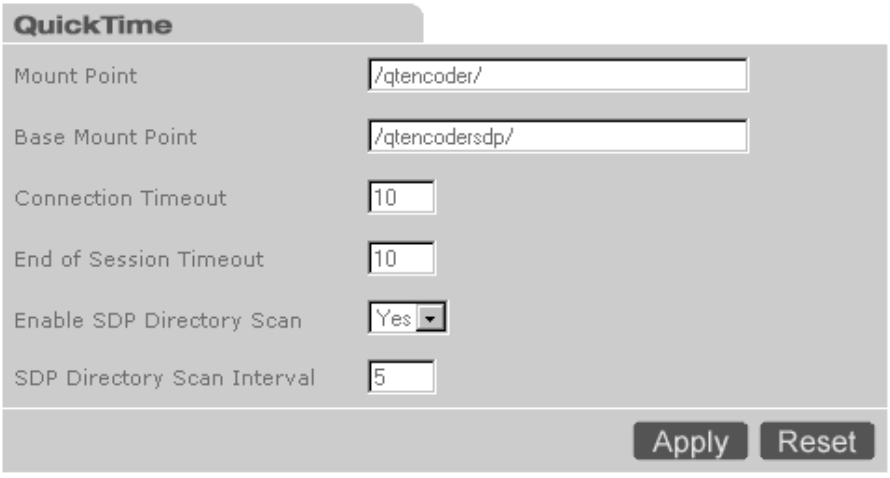
Additional Information

For information on setting up and running G2SLTA, see *RealServer Administration Guide*.

Setting up RealServer for QuickTime Broadcasting

RealServer 8 is predefined to receive QuickTime streams from an encoder, such as **PlaylistBroadcaster** or the Sorenson Broadcaster. You typically do not need to change these RealServer settings, but you need to know how RealServer is configured for a QuickTime broadcast. In RealSystem Administrator, click **Broadcasting>QuickTime** in the **Configure** section to display the QuickTime broadcasting configuration screen.

QuickTime Broadcast Configuration Screen for RealServer 8



This QuickTime broadcasting configuration screen sets the following values:

- Mount Point

  The mount point is used in URLs to indicate that the broadcast is a QuickTime stream. URLs to QuickTime broadcasts look like this:

  `rtsp://realserver.example.com:554/qtencoder/play.sdp`

- Base Mount Point (QuickTime content directory)

  The base mount point designates where SDP files for QuickTime broadcasts reside. URLs to these files use the mount point designation as described above, rather than this directory name. RealServer then locates

the files using the base mount point. In a default installation of RealServer on Windows, the base mount point corresponds to this folder:

```
C:\Program Files\Real\RealServer\Content\qtencodersdp
```

On UNIX, the QuickTime broadcast directory may be this:

```
/usr/RealServer/Content/qtencodersdp
```

- Connection Timeout

  This is the time in seconds RealServer waits for the encoder to respond with a broadcast stream when a broadcast starts. The default value is 10 seconds. If the timeout value expires before the encoder responds, RealServer terminates the broadcast.

- End of Session Timeout

  This is the time in seconds RealServer waits for the encoder to respond if it has stopped sending data but has not indicated that the broadcast has stopped. The default value is 10 seconds. If the timeout value expires before the encoder responds, RealServer terminates the broadcast.

- Enable SDP Directory Scan

  This field is set to **No** by default, which makes the QuickTime broadcast start when the first client requests the broadcast stream. If you set this feature to **Yes**, RealServer scans the QuickTime content directory at regular intervals and cues the broadcast when it finds a new SDP file there. Hence the stream is prepared when an SDP file is found, then broadcast when the first media player requests the stream.

- SDP Directory Scan Interval

  This feature is used only when **Enable SDP Directory Scan** is set to **Yes**. It sets the frequency in seconds that RealServer scans the QuickTime content directory for new SDP files. The default is 5 seconds.

Tip

Read *RealServer Administration Guide* to learn about RealServer's broadcasting procedures before attempting to broadcast QuickTime.

Broadcasting QuickTime with PlaylistBroadcaster

The Darwin Streaming Server includes a **PlaylistBroadcaster** utility that functions like RealServer's G2SLTA: it streams a prerecorded clip to a server,

which then delivers the stream as if it were a live event. Through simple modifications, you can use **PlaylistBroadcaster** to deliver QuickTime clips to RealServer instead of the Darwin Streaming Server.

Note

Be sure to read "Setting up RealServer for QuickTime Broadcasting" on page 6.

Setting up PlaylistBroadcaster for use with RealServer

You should be familiar with how **PlaylistBroadcaster** operates before you attempt to use it with RealServer. You can find instructions for using this application in the document *About Darwin Streaming Server*, which is included with the Darwin Streaming Server. When your hinted QuickTime clip is ready for broadcast, follow the steps below to stream the clip to RealServer.

➤ To prepare a broadcast using PlaylistBroadcaster:

1. Copy the QuickTime clip or set of clips to any directory that is accessible to **PlaylistBroadcaster** and RealServer.
2. Refer to the document *About Darwin Streaming Server* for information about creating a complete playlist, and observe the following guidelines:
   a. Be sure to save the file as text-only.
   b. Use the full path, not a relative path, for your SDP reference movie, which is typically the first movie in the playlist. You can use relative paths to other movies. For example:

```
*PLAY-LIST*
# Individual media files with weights
/music/jazz/take5.mov 2
/music/rock/freebird.mov 9
```

3. Refer to the document *About Darwin Streaming Server* for information about creating a complete broadcast description file, and observe the following guidelines:
   a. Be sure to save the file as text-only.
   b. For `sdp_reference_movie`, use the full path, not a relative path, to your SDP reference movie, which is typically the first movie in your playlist. For example:

```
sdp_reference_movie /music/jazz/take5.mov
```

   c. For `destination_ip_address`, enter RealServer's IP address. For example:

```
destination_ip_address 207.188.7.41
```

d. For `destination_base_port`, enter the port on which RealServer will receive the QuickTime stream. For example:

```
destination_base_port 5004
```

The broadcast uses two RealServer ports for each QuickTime track, with the base port as the first port. If 5004 is your base port and your broadcast has a video and an audio track, for example, the broadcast uses ports 5004 through 5007 on the RealServer machine. You need to ensure that these ports are not in use by other processes.

Starting a Broadcast using PlaylistBroadcaster

When you have configured RealServer and **PlaylistBroadcaster** for your simulated live broadcast, you can start the broadcast by following the steps below.

➤ To start a broadcast using PlaylistBroadcaster:

1. Create a Web page link to your broadcast. You can use the standard QuickTime embedding procedure to create a link that launches the QuickTime player. The URL to the broadcast stream will look like this:

   ```
   rtsp://realserver.example.com:554/qtencoder/play.sdp
   ```

   The URL components have these values:

`rtsp://`	The RTSP protocol designation.
`realserver.example.com`	The IP address or DNS name of your RealServer.
`:554`	The port on which your RealServer receives RTSP requests.
`/qtencoder/`	The RealServer mount point that designates QuickTime input from an external source. (See "Setting up RealServer for QuickTime Broadcasting" on page 6 for more information.)
`play.sdp`	The name of your Session Description Protocol (SDP) file. This file is specified in your broadcast description file and is created automatically by **PlaylistBroadcaster**.

2. Run **PlaylistBroadcaster** using the name of your broadcast description file. For example:

   ```
   PlaylistBroadcaster broadcast.txt
   ```

PlaylistBroadcaster generates the SDP file in a directory of the Darwin Streaming Server, as defined by the `sdp_file` keyword of the broadcast description file.

3. Transfer the generated SDP file to RealServer's QuickTime content directory by any means available, such as FTP. Once the SDP file is in this directory, your broadcast link is valid and RealServer can stream the QuickTime playlist.

Additional Information

The QuickTime content directory is described in "Setting up RealServer for QuickTime Broadcasting" on page 6. Refer to the document *About Darwin Streaming Server* for additional information such as stopping and archiving the QuickTime broadcast.

Streaming Live QuickTime with Sorenson Broadcaster

The Sorenson Broadcaster encodes a live event as a QuickTime stream, delivering the stream to RealServer for broadcast. Using the Sorenson Broadcaster is the only way to broadcast live QuickTime. You cannot broadcast live QuickTime streams using RealProducer, which broadcasts only RealAudio or RealVideo. Information about the Sorenson broadcaster is available at the Sorenson Web site at:

http://www.sorenson.com/SorensonBroadcaster/overview.html

Creating a Link for Live QuickTime

As described in "Setting up RealServer for QuickTime Broadcasting" on page 6, RealServer is predefined to accept input from the Sorenson Broadcaster. You simply need to create a Web page link to your live broadcast. You can use the standard QuickTime embedding procedure to create a link that launches the QuickTime player. The URL to the live stream will look like this:

```
rtsp://realserver.example.com:554/qtencoder/live.sdp
```

The URL components have these values:

`rtsp://`	The RTSP protocol designation.
`realserver.example.com`	The IP address or DNS name of your RealServer.

`:554`	The port on which your RealServer receives RTSP requests.
`/qtencoder/`	The RealServer mount point that designates QuickTime input from an external source. (See "Setting up RealServer for QuickTime Broadcasting" on page 6 for more information.)
`live.sdp`	The name of your Session Description Protocol (SDP) file. This file is created automatically by the Sorenson Broadcaster.

Starting a Broadcast with Sorenson Broadcaster

This Sorenson Broadcaster Web site has a tutorial on broadcasting:

http://www.sorenson.com/SorensonBroadcaster/tutorial/index.html

Follow the tutorial's broadcast instructions and do the following:

- In the **Quality** tab, be sure to set your broadcast speed and quality.
- In the **Network** tab, select **Unicast** from the **Broadcast Type** list, and specify the IP address of your RealServer machine.
- Save the announcement movie as an SDP file (`.sdp`) instead of as a QuickTime movie (`.mov`). Transfer the SDP file to RealServer's QuickTime content directory by any means available, such as FTP.

Additional Information

The QuickTime content directory is described in "Setting up RealServer for QuickTime Broadcasting" on page 6.

Notes on QuickTime Streaming

Please note the following when streaming QuickTime 4 with RealServer.

Encoder Redundancy

Encoder redundancy allows multiple encoding sources to send the same live or simulated live stream to RealServer for broadcast. If the primary encoding source fails, RealServer and its connected media players switch over to a back-up stream. Encoder redundancy faces the following limitations with QuickTime broadcasts:

- Encoder redundancy works only with a simulated live broadcast using G2SLTA. It does not work with a live QuickTime stream or a simulated live broadcast originating from **PlaylistBroadcaster**.
- If the primary stream files, RealPlayer automatically switches to a back-up stream and rebuffers the presentation. The QuickTime player will not fail-over automatically, however. Instead, the user must manually restart the stream by clicking the **Stop** and **Play** buttons.

HTTP Download for Other Datatypes

The QuickTime player supports additional data formats such as SMIL, Flash, and text. All formats other than QuickTime, though, must be sent to the QuickTime player over HTTP instead of RTSP.

Additional Information about QuickTime

Apple Computer offers extensive information about creating QuickTime clips. The following Web pages provide basic information about QuickTime, as well as instructions on hinting and embedding clips:

- **http://www.apple.com/quicktime/authoring/qtwebfaq.html**
- **http://www.apple.com/quicktime/authoring/hinttrack.html**
- **http://www.apple.com/quicktime/authoring/embed.html**
- **http://developer.apple.com/quicktime/quicktimeintro/tools/datarate.html**

RealServer Administration Guide is included with RealServer and available separately at RealNetworks' Technical Support Web site:

- **http://service.real.com/help/library/servers.html**